

REMARKS

Prior to the examination, please enter the above amendment in the files of this application. By this amendment, claims 2-4, 7-9 and 11-16 have been amended. Claims 2-4, 7-9 and 11-16 remain pending in this application.

No additional fee is deemed to be required for the filing of this amendment, but if such is, please charge it for this application to Deposit Account No. 50-0320.

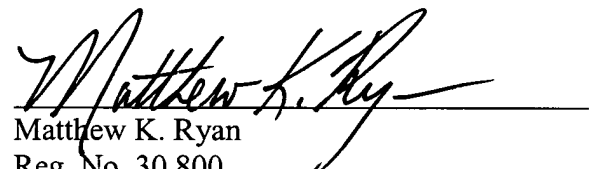
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned **“Version with markings to show changes made.”**

A Notice of Allowance is earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph bridging pages 3-4 has been rewritten as follows:

--As shown in Fig. 2, the brace member 6 has a plate like steel member 8 (this is referred to as brace sheet) of which the outer edges 8A and 8B are fixed by welding to the cross beam steel members 2A or 2B and the vertical steel member 3 of the frame structure part 4, and a plate like connecting steel member 9 (this is referred to as brace plate) [9] welded to the both ends of a tension member 7 that is a stick steel member for example. Two bolt holes 10A and 10B drilled in the brace sheet 8 and the brace plate are clamped by bolts, so that the brace plate 9 is joined by pressure to the brace sheet 8. Here, in the [the joint by] pressure [means a] joint method employed, [in which] a bolt is contacted to the inside surface of the bolt holes 10A and 10B so as to prevent [and preventing] the slippage [slipping] between the brace plate 9 and the brace sheet 8.--

The paragraph bridging pages 4-5 has been rewritten as follows:

--If adopting this method, however, the following phenomenon occurs. As shown in Fig. 3, the direction D1 that the bolt holes 10A and 10B are aligned and the tensile direction D2 by the tension member 7 do [are] not coincide, so that if the tension member 7 is pulled to a direction different from the arranged direction D1 that the bolt holes are aligned, the brace plate 9 turns to a direction matching with the tensile direction D2 centering the bolt passing through the front bolt hole 10A. Thus, as shown in Fig. 4, the rear bolt hole 10B is deviated from a fixed position 10B1 when the brace plate 9 was fixed to the brace sheet 8 in construction to a deviated position 10B2 deviated by the turn of the brace plate 9.--

The first full paragraph on page 9 has been rewritten as follows:

--Furthermore, since a slip-proof surface which has higher parts and grooves engaged so as to mutually fit is formed on a joined surface of steel members that are mutually joined, when the steel members are mutually clamped by a joining member, the slip-proof surfaces are mutually fit. Thus, the steel members can be firmly joined.--

The third full paragraph on page 42 has been rewritten as follows:

--(7-7) In the aforementioned embodiment, it has dealt with the case where the slip-proof surfaces 52 and 52X are concentrically formed around the bolt holes 21 and 21X. However, in place of this, they may be formed at positions other than the bolt holes [boles] 21 and 21X or positions which are not concentric with the bolt holes 21 and 21X.--

The paragraph bridging pages 49-50 has been rewritten as follows:

--Here, since the recessed and projected parts of the slip-proof surfaces 84B and 83C are engaged so as to be mutually fitted by the in-row system, even if a momentary tensile force applied from the tension members 81 becomes considerably large, the brace members 82 have sufficient [display] holding power [bearable this].--

IN THE CLAIMS:

Claims 2-4 have been rewritten as follows:

--2. (Amended) A joined surface processing apparatus utilized for having joined surfaces of first and second steel members overlapped each other and fixing said first and second steel members with a pressure by a connecting member passing through connecting holes drilled in said first and second members, so as to join said first and second steel members, comprising:

steel member feeding means for feeding a steel member onto a working table and locating said steel member [it];

processing mechanism means having rolling dies having [forming] a rolling edge that has one or plural concentric edge [higher] parts on a conical incline each composed of a mountain-shaped portion and a valley-shaped portion having a radius of curvature and extending from an inner edge to an outer edge, for rolling said rolling dies in a [the] state where said conical incline is contacted to the joined surface of said steel member in a direction perpendicular to said joined surface of said steel member and pressed by a prescribed pressure, so as to form [and forming] a slip-proof surface having corresponding [a pair of or plural pairs of] concentric recessed and projected parts on the joined surface of said steel member, whereby a change of the radius of curvature of the edge parts from the inner edge to the outer edge thereof is preselected to a change of the radius of curvature of the corresponding concentric recessed and projected parts; and

steel member sending means for sending said steel member with said formed slip-proof surface from said working table to the outside, wherein

said steel member is non-bent or non-curved to form said slip-proof surface.

3. (Amended) A processing tool utilized for having joined surfaces of first and second steel members overlapped each other and fixing said first and second steel members with a pressure by a connecting member passing through connecting holes drilled in said first and second members, so as to join said first and second steel members, comprising: [characterized by;]

[having a] rolling dies having [forming] a rolling edge that has one or plural concentric edge [higher] parts on a conical incline each composed of a mountain-shaped portion and a valley-shaped portion having a radius of curvature and extending from an inner edge to an outer edge, which is rolled [rolling the rolling die] in a [the] state where said conical incline is

contacted to the joined surface of said steel member in a direction perpendicular to said joined surface of said steel member and pressed by prescribed pressure, so as to form [and forming] a slip-proof surface having corresponding [a pair of or plural pairs of] concentric recessed and projected parts on the joined surface of said steel member each having a corresponding radius of curvature, whereby a change of the radius of curvature of the edge parts from the inner edge to the outer edge thereof is preselected to a change of the radius of curvature of the corresponding concentric recessed and projected parts, and said steel member is non-bent or non-curved to form said slip-proof surface.

4. (Amended) A steel member utilized for having joined surfaces of first and second steel members overlapped each other and fixing said first and second steel members with a pressure by a connecting member passing through connecting holes drilled in said first and second members, so as to join said first and second steel members, comprising: [characterized in that;]

a slip-proof surface having corresponding concentric recessed and projected parts each composed of a mountain-shaped portion and a valley-shaped portion having a corresponding radius of curvature, on a joined surface, which is formed by rolling dies having [forming] a rolling edge that has one or plural concentric edge [higher] parts on a conical incline each having a radius of curvature [is applied, and said rolling die is rolled] in a [the] state where said conical incline is contacted to said [a] joined surface in a direction perpendicular to said joined surface of said steel member and pressed by a prescribed pressure, [so that a slip-proof surface having a pair of or plural pair of concentric recessed and projected pairs is formed on said joined surface]

whereby a change of the radius of curvature of the edge parts from the inner edge to the outer edge thereof is preselected to a change of the radius of curvature of the corresponding concentric recessed and projected parts, and said joined surface is non-bent or non-curved to form said slip-proof surface.--

Claims 7-9 have been rewritten as follows:

--7. (Amended) Steel members comprising:

[they are a] first and [a] second steel members to be mutually joined by having [that their] first and second joined surfaces thereof [are] mutually overlapped and to be [said first and second steel members are] fixed with a [by] pressure [welding] by a connecting member passing through [a] first and [a] second connecting holes drilled in said first and second steel members [first and second joined surfaces] respectively, and wherein

[said first and second steel members have a first or a second slip-proof surface which has a pair of or plural pair of concentric recessed and projected parts on said first or second joined surface, and they are joined in the state where said first and second slip-proof surfaces are mutually overlapped so that said concentric recessed and projected parts of said first slip-proof surface are engaged with said concentric recessed and projected parts of said second slip-proof surface as fitting]

with respect to the joined surface of said first steel member, before joining with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said

first steel member by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, before joining, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes;

when joining, said first and second steel members are joined with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

8. (Amended) Steel members comprising: [characterized in that]

[they are a] first and [a] second steel members to be mutually joined by having
[that their] first and second joined surfaces thereof [are] mutually overlapped and then fixed with
a [said first and second steel member are fixed by] pressure [welding] by a connecting member
passing through [a] first and [a] second connecting holes drilled in said first and second steel
members [joined surfaces] respectively, and wherein

[one of said first and second steel members has a slip-proof surface which has a
pair of or plural pairs of concentric recessed and projected parts on said joined surface, and the
steel members are joined in the state where said concentric recessed and projected parts of said
slip-proof surface is overlapped on the joined surface of the other steel member of said first and
second steel members]

with respect to the joined surface of said first steel member, before joining, with
first rolling dies having a rolling edge that has one or plural concentric edge parts on a first
conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having
a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof
surface having corresponding concentric recessed and projected parts composed of concentric
mountain-shaped portions and grooved portions is formed around said connecting holes of said
first steel member by rolling said first conical incline of said first rolling dies along with the
locus of the concentric circle focusing said connecting holes;

when joining, said first and second steel members are joined with said mountain-
shaped portions of said concentric recessed and projected parts of said first slip-proof surface of
said first steel member being embedded in a joined surface of said second steel member
according to the pressure strength of said connecting member; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

9. (Amended) A steel member joining apparatus comprising:

first and second connecting holes drilled in the top ends of first and second joined surfaces of [where a] first and [a] second steel members to be mutually overlapped so as to pass through said first and second steel members, wherein [the respective thickness]:

[a connecting member for fixing said first and second steel members by passing through said connecting holes of said first and second steel members and clamping and in the thickness direction; and

a first and a second slip-proof surfaces having one or plural concentric higher parts and grooves on the joined surfaces of said first and second steel members respectively;

wherein said first and second slip-proof surfaces are mutually overlapped in an inverted relationship; and

in said steel member joining apparatus] wherein

the higher parts of said first slip-proof surface are engaged with the grooves of said second slip-proof surface as fitting]

with respect to the joined surface of said first steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said first steel member

by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes;

said first and second steel members are joined with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.--

Claims 11-16 have been rewritten as follows:

--11. (Amended) Steel members comprising [characterized in that]:

[they are a] first and [a] second steel members to be mutually joined, wherein:

[a] first and [a] second connecting holes are drilled in the top end where said first and second steel members are mutually overlapped so as to pass through said first and second steel members [the respective thickness]; [and on the joined surfaces of the top end, a first and a second slip-proof surface which has one or plural concentric higher parts and grooves is formed around said first and or second connecting hole; and

if said first and second steel members are clamped by a connecting member passing through said first and second connecting holes, said first and second slip-proof surfaces are engaged so that the higher parts of said first (and second) slip-proof surface is fit to the grooves of said second (and first) slip-proof surfaces]

with respect to the joined surface of said first steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said first steel member by rolling said first conical inline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an

inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mounting shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes; wherein:

when said first and second steel members are clamped by said connecting member passing through said first and second connecting holes, said first and second steel members are fixed by clamping in the thickness direction by said connecting member passing through said first and second connecting holes of said first and second steel members with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

12. (Amended) A strut reinforcing member to be used in the frame structure part of a steel frame structure comprising [characterized in that]:

[it is a strut reinforcing member to be used in the frame structure, part of a steel frame structure;

said strut reinforcing member comprising:]

a first steel member of which the bottom end is to be fixed to said frame structure part, and having a first connecting hole drilled in the top end so as to pass through said first steel member [the thickness]; and

a second steel member having a second connecting hole drilled in the top end so as to pass through said second steel member [the thickness], and a tension member fixed to the other end [in one body]; and

[said strut reinforcing member] wherein:

[on the joined surfaces of said first and second steel members, a first or a second slip-proof surface which has one or plural concentric higher parts and grooves is formed and in the state where said top ends of said first and second steel members are mutually overlapped, if said first and second steel members are clamped by a connecting member passing through said first and second connecting holes, the higher parts of said first (and second) slip-proof surface are with the grooves of said second (and first) slip-proof surfaces as fitting]

with respect to the joined surface of said first steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said first steel member by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second

conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes, wherein;

said first and second steel members are fixed by clamping in the thickness direction by said connecting member passing through said first and second connecting holes of said first and second steel members with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

13. (Amended) A reinforcing member having a junction member at the both ends of a tension member to join the said [above] tension member to a steel-frame structure and supporting a tensile load from the steel-frame structure by said tension member, wherein:

said junction member comprises: [,]

a first plate [like] junction steel member to be fixed to said steel-frame structure side, and a second plate [like] junction steel member to be fixed to said tension member side, and

a clamping member for clamping said first and second junction steel members in a [the] state where said clamping member passes through [a] first and second through holes respectively drilled into [as passing through the thickness of] said first and second junction steel members [are passed through] and wherein; [said first junction steel member has a first slip-proof surface which has concentric recessed and projected parts on one side or both sides, and said second junction steel member has a second slip-proof surface which has concentric recessed and projected parts on one side of said first junction steel member side; and

said first and second junction steel members are joined in one body by overlapping and clamping them by said clamping member that passes through said first and second through holes in the state where said recessed and projected parts on said first and second slip-proof surfaces are mutually engaged as fitting]

with respect to the joined surface of said first plate junction steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said first steel member by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second plate junction steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes, wherein;

said first and second plate junction steel members are fixed by clamping in the thickness direction by said connecting member passing through said first and second connecting holes of said first and second steel members with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second junction steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

14. (Amended) A reinforcing member having a junction member at the both ends of a tension member to join the said [above] tension member to a steel-frame structure and supporting a tensile load from the steel-frame structure by said tension member,

wherein:

said junction member comprises; [.,]

a first plate [like] junction steel member to be fixed to said steel-frame structure side,

a second plate [like] junction steel member to be fixed to said tension member side, and

a clamping member for clamping said first and second junction steel members in a [the] state where said clamping member passes through [a] first and [a] second through holes respectively drilled in [as passing through the thickness of] said first and second junction steel members [are passed through]; and wherein

[said first junction steel member has a first slip-proof surface which has concentric recessed and projected parts around said first through hole to make said clamping member pass through on its one side thereof or both sides, and said second junction steel member has a second slip-proof surface which has concentric recessed and projected parts around said second through hole to make said clamping member pass through; and

said first and second junction steel members are joined in one body overlapping and clamping them by said clamping member that passes through said first and second through holes in the state where said recessed and projected parts on said first and second slip-proof surfaces are engaged as mutually fitting]

with respect to the joined surface of said first steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface having corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions is formed around said connecting holes of said first steel member by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface having corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions is formed around said connecting holes of said second steel member by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes, wherein;

said first and second steel members are fixed by clamping in the thickness direction by said connecting member passing through said first and second connecting holes of said first and second steel members with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said

first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.

15. (Amended) The reinforcing member according to claim [13 or] 14, wherein;
said clamping member has a collar part at the outer circumferential part on a surface contacting to said overlapped first and second steel members so as to form a hollow part inside on said through hole side.

16. (Amended) A frame structure apparatus comprising [characterized in that]:
[it is a frame structure apparatus forming] a frame structure in which the both ends of four steel members are mutually overlapped and joined at the four corner parts;

each said corner part [parts] of said frame structure comprises: [comprises,]

a connecting hole drilled in the top end where [a] first and [a] second steel members to be mutually joined are mutually overlapped so as to pass through said first and second steel members; [the respective thickness,]

a connecting member for fixing said first and second steel members by passing through said connecting holes of said first and second steel members and clamping said first and second steel members in the thickness direction, and

[a] first and [a] second slip-proof surfaces having plural pairs of concentric recessed and projected parts that have one or plural concentric edge [higher] parts and grooves on the joined surfaces of said first and steel members; and wherein

[said steel member joining apparatus wherein;

the higher parts of said first slip-proof surface are engaged with the grooves of said second slip-proof surface]

with respect to the joined surface of said first steel member, with first rolling dies having a rolling edge that has one or plural concentric edge parts on a first conical incline each composed of a mountain-shaped portion and a valley-shaped portion, having a radius of curvature, and extending from an inner edge to an outer edge, a first slip-proof surface is formed to have corresponding concentric recessed and projected parts composed of concentric mountain-shaped portions and grooved portions by rolling said first conical incline of said first rolling dies along with the locus of the concentric circle focusing said connecting holes;

with respect to the joined surface of said second steel member, with second rolling dies having a rolling edge that has on one or plural concentric edge parts on a second conical incline each composed of a valley-shaped portion alternating with said mountain-shaped portion of said first rolling dies and a mountain-shaped portion alternating with said valley-shaped portion of said first rolling dies, having said radius of curvature, and extending from an inner edge to an outer edge, a second slip-proof surface is formed to have corresponding concentric projected and recessed parts composed of concentric grooved portions and mountain-shaped portions by rolling said second conical incline of said second rolling dies along with the locus of the concentric circle focusing said connecting holes, wherein;

said first and second steel members are fixed by clamping in the thickness direction by said connecting member passing through said first and second connecting holes of said first and second steel members with said first and second slip-proof surfaces overlapped wherein said mountain-shaped portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said grooved portions of said concentric recessed

and projected parts of said second slip-proof surface, and said grooved portions of said concentric recessed and projected parts of said first slip-proof surface is matingly fitted with said mountain-shaped portions of said concentric recessed and projected parts of said second slip-proof surface; and

said first and second steel members are non-bent or non-curved to form said first and second slip-proof surfaces.--